

**EVALUATION REPORT  
Brocade Communications  
Application #6455 Plant #14982  
San Jose, CA**

**I. BACKGROUND**

Brocade Communications has applied for a Permit to Operate for its two standby diesel generators. The engines were installed in July 2002. The facility states that the generators will meet BACT requirements for each engine with the installation of an abatement device identified as a selective catalytic reduction unit that incorporates a particulate oxidation catalyst unit. The facility will test the engines once the abatement equipment is installed to show that they are in compliance with BACT. The engines are Cummins Emergency Diesel engines Model KTA19-G4; 755 BHP. The generators would run for 24 hours per day if a blackout were to occur. The following sources are requesting a Permit to Operate:

**S-1 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually abated by A-1**

**S-2 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually abated by A-2**

**A-1 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**

**A-2 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**

**II. EMISSION CALCULATIONS**

Emission factors provided by Cummins Diesel Generators meet BACT(2) for IC Engines with the addition of the abatement equipment. Thus, Nox, CO, PM-10 and POC emissions are based on usage of abatement equipment.

	<u>Manufacturer</u>	<u>BACT(2)</u>
NOx	6.9 g/bhp-hr	6.9 g/bhp-hr
CO	2.75 g/bhp-hr	2.75 g/bhp-hr
POC	1.5 g/bhp-hr	1.5 g/bhp-hr
PM10-diesel	0.15 g/bhp-hr	0.15 g/bhp-hr

Hours of Operation = 100 hr/yr

Diesel Heat Capacity = 19,300 BTU/lb

Fuel Consumption = 35.2 gal/hr

Estimated Fuel Usage = 35.2 gal/hr X 100 hr/yr = 3520 gal/yr

Heat Input = 35.2 gal/hr X 7.1 lb/gal X 19,300 Btu/lb = 4.82E6 Btu/hr

Emission Calculations per source:

NOx = 6.9 g/bhp-hr (755 hp)(1 lb/454 g)(100 hr/yr) = 1147.47 lb/yr or 0.5737 TPY

CO = 2.75 g/bhp-hr (755 hp)(1 lb/454 g)(100 hr/yr) = 457.32 lb/yr or 0.2287 TPY

POC = 1.5 g/bhp-hr (755 hp)(1 lb/454 g)(100 hr/yr) = 249.45 lb/yr or 0.1247 TPY

PM10 = 0.15 g/bhp-hr (755 hp)(1 lb/454 g)(100 hr/yr) = 24.95 lb/yr or 0.0125 TPY

SO2- Calculation: see spreadsheet

**III. PLANT CUMULATIVE INCREASE AFTER 4/5/91**

<u>Current</u>	<u>New</u>	<u>New Total</u>
----------------	------------	------------------

	<b>Ton/yr</b>	<b>Ton/yr</b>	<b>Lbs/yr</b>	<b>Tons/yr</b>
<b>POC =</b>	0.00	0.2495	498.90	0.2495
<b>NO<sub>x</sub> =</b>	0.00	1.1475	2294.93	1.1475
<b>SO<sub>2</sub> =</b>	0.00	0.0332	66.39	0.0332
<b>CO =</b>	0.00	0.4573	914.65	0.4573
<b>NPOC =</b>	0.00	0.0000	0.00	0.0000
<b>TSP =</b>	0.00	0.0250	49.89	0.0250
<b>PM<sub>10</sub> =</b>	0.00	0.0250	49.89	0.0250

#### IV. TOXIC SCREENING ANALYSIS

This application is subject to a toxic review because the source triggers a Toxics Risk Screening. The facility does have diesel particulate emissions greater than the toxic trigger level.

<b>Toxic Pollutant Emitted</b>	<b>Emission Rate (lb/yr)</b>	<b>Risk Screening Trigger (lb/yr)</b>
PM 10 (Diesel Particulate)	49.89	0.6

#### V. BEST AVAILABLE CONTROL TECHNOLOGY

Sources S-1 and S-2 from this facility triggers BACT since the emission rate of POC, CO, and NOX are each greater than 10 pounds of emission per highest day per source per Regulation 2-2-301. The facility will utilize a Selective Catalyst Unit to meet BACT(2) for both the emergency generators on a standby basis since without it, the facility would not be able to comply with BACT(2) as the manufacturer's specifications are not in compliance with BACT(2) criteria.

#### VI. OFFSETS

Offsets are not required since the facility's emissions are much less than 15 ton/yr per Regulation 2-2-302.

#### VII. STATEMENT OF COMPLIANCE

Source S-1 and S-2 of this application is fired with liquid fuel and therefore is not subject to Regulation 9, Rule 8 ("NO<sub>x</sub> and CO from Stationary Internal Combustion Engines"). The engine is subject to the SO<sub>2</sub> limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Compliance with both of these requirements is very likely since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, S-1 and S-2 are subject to Regulation 6 ("Particulate and Visible Emissions"). These engines are not expected to produce visible emissions or fallout in violation of this regulation and it will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3. This project is within 1,000 ft from the nearest public school and therefore is subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is required because the source was installed after May 2000 and it was determined with a PM-10 of 0.15 g/BHP-hr the risk is less than 10 in a million. The

level of risk has been determined as acceptable under the risk management policy for diesel-fueled reciprocating engines that meet the TBACT requirement (PM-10 emissions less than 0.15 g/hp-hr). The level of risk for students at the Walter L. Bachrodt Elementary School that is within a quarter of a mile is 0.35 in a million. For engines that meet TBACT requirements, the maximum acceptable cancer risk for the project is 10 in a million. The facility will operate the source for no more than 100 hours in a 12-month period.

Offsets, PSD, NSPS, and NESHAPS are not triggered.

## VIII. CONDITIONS

- S-1 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually by A-1**
- S-2 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually abated by A-2**
- A-1 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**
- A-2 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**

Conditions for sources S-1 and S-2

1. The sources known as S-1 and S-2 engines are subject to the requirements of Regulation 9, Rule 1 ("Sulfur Dioxide"), and the requirements of Regulation 6 ("Particulate and Visible Emissions"). The Emergency Generators known as (S-1 and S-2) shall be fired exclusively on ultra low sulfur diesel, fuel having a sulfur content less than 15 ppm by weight. [Regulation 9, Rule 1; Regulation 6]

### 2. Hours of Operation

The emergency standby engines (S-1 and S-2) shall only be operated to mitigate emergency conditions or for reliability-related activities. Operation for reliability-related activities shall not exceed 100 hours per source in any calendar year. Operation while mitigating emergency conditions is unlimited. (Basis: Reg 9-8-330)

3. Requirements of Engines to Comply with BACT require both engines to be abated by Abatement Devices A-1 and A-2 at all times

Sources S-1 and S-2 are required to be abated at all times by A-1 and A-2. The owner/operator shall ensure that S-1 and S-2 when abated by A-1 and A-2 are capable of operation with:

$\text{NO}_x \text{ levels} \leq 6.9 \text{ grams/hp-hr}$   
 $\text{CO levels} \leq 2.75 \text{ gm/hp-hr}$   
 $\text{VOC levels} \leq 1.5 \text{ gm/hp-hr}$   
 $\text{PM}_{10} \text{ levels} \leq 0.15 \text{ gm/hp-hr}$

during the initial source test. (basis: BACT, TBACT, Toxics Risk Screen, cumulative increase)

#### 4. Testing Requirements ISO 8178

In order to demonstrate compliance with condition # 3 above, the owner/operator shall perform a District approved source test within 30 days of startup, in accordance with the ISO 8178 (D2 cycle) engine certification test method, as closely as possible, otherwise, with the District's Manual of Procedures. The owner/operator shall notify the Manager of the District's Source Test Section at least seven (7) days prior to the test, to provide the District staff the option of observing the testing. Within 45 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. (basis: BACT, TBACT, Toxics Risk Screen, Regulation 2-1-403, cumulative increase)

If the source test results show that the emissions exceed any of the emission limits of these permit conditions, the Permit to Operate for the sources shall be denied. (basis: Regulation 2-1-304)

#### 5. Emergency Conditions is defined as any of the following: (Basis: Reg 9-8-231)

- a. Loss of regular natural gas supply.
- b. Failure of regular power supply.
- c. Flood mitigation.
- d. Sewage overflow mitigation.
- e. Fire.
- f. Failure of a primary motor, but only for such time as needed to repair or replace the primary motor.

#### 6. Reliability-related activities is defined as any of the following: (Basis: Reg 9-8-232)

- a. Operation of an emergency standby engine to test its ability to perform for an emergency use, or
- b. Operation of an emergency standby engine during maintenance of a primary motor.

#### 7. The emergency standby engines shall be equipped with either: (Basis: Reg 9-8-530)

- a. non-resettable totalizing meter that measures and records the hours of operation for the engine, or
- b. a non-resettable fuel usage meter.

#### 8. Records

The following monthly records shall be maintained in a District-approved log for at least 2 years and shall be made available for District inspection upon request. (Basis: Reg 9-8-530, 1-441)

- a. Total hours of operation.

- b. Hours of operation under emergency conditions and a description of the nature of each emergency condition.
- c. Fuel usage.

## **IX. RECOMMENDATION**

Recommend that an A/C be waived and a P/O be issued for the following equipment:

- S-1 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually abated by A-1**
- S-2 Cummins Model KTA19-G4 Diesel Emergency Generator, 573 KW (755 BHP) 100 hours annually abated by A-2**
- A-1 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**
- A-2 Selective Catalytic Reactor and particulate oxidation catalyst unit; model # CAP/HIS, CR-30/40 W.C; ESW model DOC/diesel reactor**

---

*Irma C. Salinas*  
*Air Quality Engineer II*  
*Permit Services Division*